

In reservoirs existing on January 1, 1950

As a matter of record and general information, month-end storage data are given in Appendix D for reservoirs in existence above the points of measurement on January 1, 1950. These data are pertinent to allocation under Article V Section C Item 5 of the Compact.

RULES AND REGULATIONS FOR ADMINISTRATION OF
THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact, between the States of Wyoming, Montana and North Dakota, having become effective on October 30, 1951 upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the States of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, the following rules and regulations are adopted subject to the provisions for amendment, revision or abrogation as provided herein.

Article I. Collection of Water Records

- A. It shall be the joint and equal responsibility of the members of the states of Wyoming and Montana to collect, cause to be collected or otherwise furnish records of tributary stream flow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

1. Clarks Fork

The gaging station known as Clarks Fork near Silesia, Montana and located in NE 1/4 SE 1/4 sec.1, T.4 S., R.23 E., shall be the point of measurement for the Clarks Fork.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River at Bighorn, Montana and located in NE 1/4 NE 1/4 sec.33, T.5 N., R.34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana, and located in NE 1/4 NE 1/4 sec.19, T.1 S., R.34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana and located in SE 1/4, sec.23, T.7 N., R.47 E., shall temporarily be the point of measurement for that stream.

4. Powder River

The gaging station known as the Powder River near Locate, Montana and located in SW 1/4 sec.14, T.8 N., R.51 E., shall temporarily be the designated point of measurement for that stream.

- B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal and industrial uses developed after January 1, 1950, shall be furnished by the members of the Commission for their respective states, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.
- C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose state such works are located; providing such data is not furnished by federal agencies under the provisions of Article III (D) of the Compact, or collected by the Commission.

Article II. Office and Officers

- A. The office of the Commission shall be located, and be that of the United States Geological Survey, in Helena, Montana.
- B. The Chairman of the Commission shall be the federal representative as provided in the Compact.
- C. The Secretary of the Commission shall be as provided for in Article III of these rules.
- D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

Article III. Secretary

- A. The Commission, subject to the approval of the Director of the United States Geological Survey, shall enter into cooperative agreements with the U.S. Geological Survey for such engineering and clerical services as may reasonably be necessary for the administration of the Compact. Said agreements shall provide that the Geological Survey shall:
 - 1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.
 - 2. Assemble factual information on stream flow, diversion and reservoir storage for the preparation of an annual report to the Governors of the signatory states.
 - 3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.
- B. Act as Secretary to the Commission.

Article IV. Budget

- A. At the annual meeting of each even numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.
- B. It shall be the obligation of the Commissioners of the states of Montana and Wyoming to endeavor to secure from the Legislature of their respective states sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the federal government.

Article V. Meetings

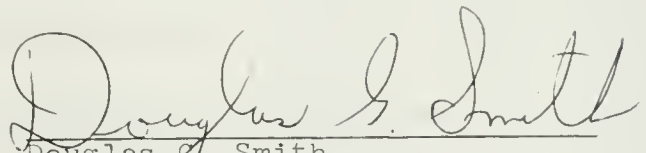
An annual meeting of the Commission shall be held each November at some mutually agreeable point in the Yellowstone River basin for consideration of the annual report for the water year ending the preceding September 30th, and for the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the


date and place of the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.


Article VI. Amendments, Revisions and Abrogations.

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.


Douglas E. Smith
Commissioner for Montana


Floyd A. Bishop
Commissioner for Wyoming

ATTESTED:


Robert C. Williams
Federal Representative

Adopted November 17, 1953
Amended November 9, 1970

MONTHLY SUMMARY OF DISCHARGE
Clarks Fork Yellowstone River near Silesia, Montana

LOCATION.--Lat $45^{\circ}30'48''$, long $108^{\circ}49'41''$, in NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.1, T.4 S., R.23 E., Carbon County, on left bank 0.5 mile downstream from Whitehorse Canal intake, 1 mile upstream from Rock Creek, and 3 miles south of Silesia.

DRAINAGE AREA.--2,093 sq mi.

PERIOD OF RECORD.--October 1969 to September 1971. Records for July 1921 to September 1969 (published as Clarks Fork Yellowstone River at Edgar) at site 5 miles upstream not equivalent owing to diversion in Whitehorse Canal during irrigation season.

GAGE.--Water-stage recorder. Altitude of gage is 3,410 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 10,200 cfs June 24 (gage height, 7.38 ft); minimum daily, 220 cfs Jan. 14.

Period of record: Maximum discharge 10,200 cfs June 24, 1971 (gage height, 7.38 ft); minimum, 165 cfs Aug. 27, 28, 1970 (gage height, 1.38 ft).

REMARKS.--Records good except those for winter period, which are poor. Diversions for irrigation of about 42,600 acres of which 1,100 acres lies below station. In addition, about 9,000 acres of land above station are irrigated by diversions from the adjoining Rock Creek basin.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in acre-feet</u>
October 1970	19,306	801	485	623	38,290
November	15,268	625	275	509	30,280
December	13,732	559	270	443	27,240
January 1971	11,885	500	220	383	23,570
February	12,525	550	360	447	24,840
March	12,445	509	320	401	24,680
April	14,953	970	319	498	29,660
May	64,562	4,980	554	2,083	128,100
June	182,760	9,720	3,220	6,092	362,500
July	95,950	4,720	1,770	3,095	190,300
August	32,419	1,740	497	1,046	64,300
September 1971	<u>29,130</u>	1,810	650	971	<u>57,780</u>
Water year 1970-71	504,935	9,720	220	1,383	1,002,000

CLARKS FORK YELLOWSTONE RIVER NEAR SILESIA, MONT.
(Replaces Clarks Fork Yellowstone River at Edgar)

EXPLANATION

1971 water year, near Silesia

1970 water year, near Silesia

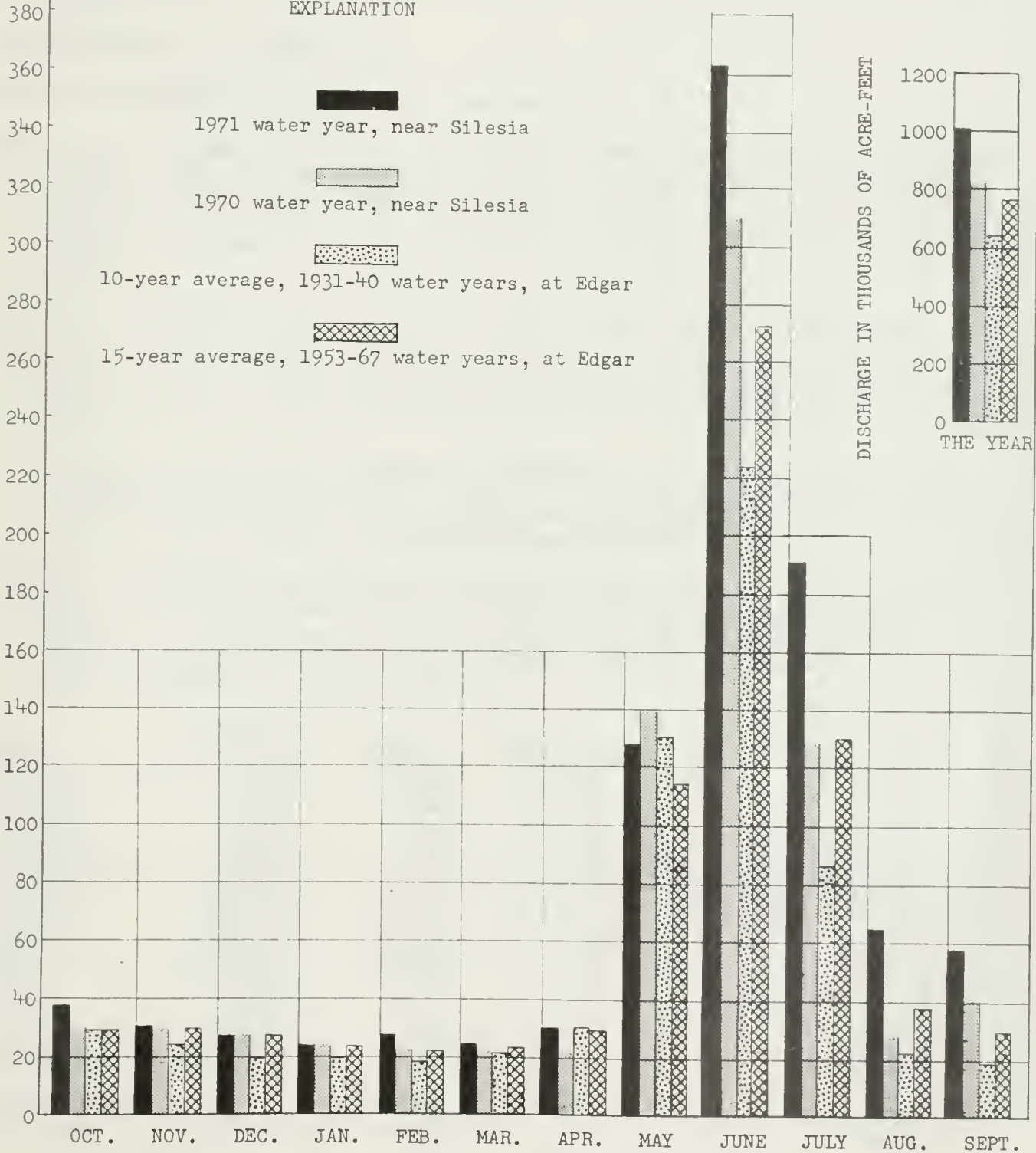
10-year average, 1931-40 water years, at Edgar

15-year average, 1953-67 water years, at Edgar

DISCHARGE IN THOUSANDS ACRE-FOOT

DISCHARGE IN THOUSANDS OF ACRE-FOOT

THE YEAR



Comparison of discharge during 1971 water year with 1970 water year, near Silesia and with average discharge for the water years 1931-40 and 1953-67 at Edgar.

MONTHLY SUMMARY OF DISCHARGE
Little Bighorn River near Hardin, Montana

LOCATION.--Lat $45^{\circ}44'08''$, long $107^{\circ}33'27''$, in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.19, T.1 S., R.34 E., Big Horn County, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mile upstream from terminal wasteway of Agency Canal, 0.6 mile upstream from mouth, and 2.3 miles east of Hardin.

DRAINAGE AREA.--1,294 sq mi.

PERIOD OF RECORD.--June 1953 to September 1971.

GAGE.--Water-stage recorder. Altitude of gage is 2,890 ft (from topographic map). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mile downstream. Oct. 7, 1953, to May 6, 1963, water-stage recorder at site 0.3 mile downstream. May 6, 1963, to Nov. 6, 1963, nonrecording gage at site 0.4 mile downstream. All at different datums.

AVERAGE DISCHARGE.--18 years, 281 cfs (203,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, about 2,000 cfs Feb. 14 (gage height, 7.30 ft, backwater from ice); minimum daily, 100 cfs Dec. 21.

Period of record: Maximum discharge, 4,520 cfs Apr. 2, 1965; maximum gage height, 11.78 ft Mar. 20, 1960, site and datum then in use (backwater from ice); minimum discharge observed, 0.20 cfs Aug. 7, 1961, result of discharge measurement.

REMARKS.--Records good except those for winter period, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity, 23,000 acre-ft). Diversions for irrigation of about 17,000 acres above station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal.

Month	Second-foot days	Maximum	Minimum	Mean	Runoff in acre-feet
October 1970	7,217	254	213	233	14,310
November	6,794	270	110	226	13,480
December	5,496	300	100	177	10,900
January 1971	5,530	300	120	178	10,970
February	17,090	1,700	170	610	33,900
March	24,558	1,870	330	792	48,710
April	16,706	1,100	373	557	33,140
May	17,507	1,290	425	565	34,730
June	28,575	1,370	467	952	56,680
July	6,710	427	103	216	13,310
August	4,522	206	109	146	8,970
September 1971	<u>5,752</u>	<u>247</u>	<u>165</u>	<u>192</u>	<u>11,410</u>
Water year 1970-71	146,457	1,870	100	401	290,500

MONTHLY SUMMARY OF DISCHARGE
Bighorn River at Bighorn, Montana

LOCATION.--Lat 46°08'50", long 107°28'00", in NE¹NE¹ sec.33, T.5 N., R.34 E., Treasure County, on right bank just downstream from bridge on old U.S. Highway 10, 0.3 mile downstream from bridge on Interstate Highway 94, 0.7 mile upstream from mouth, 1.3 mile southwest of Bighorn, and 4.4 miles east of Custer.

DRAINAGE AREA.--22,885 sq mi. At site used prior to Oct. 7, 1955, 22,410 sq mi.

PERIOD OF RECORD.--May 1945 to September 1971. Published as "near Custer," 1945-55. Records since January 1950 available in annual reports of Yellowstone River Compact Commission.

GAGE.--Water-stage recorder. Altitude of gage is 2,690 ft (by barometer). May 11 to Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945, to Oct. 6, 1955, water-stage recorder, at site 4 miles upstream at different datum.

AVERAGE DISCHARGE.--26 years, 3,805 cfs (2,757,000 acre-ft per year), unadjusted.

EXTREMES.--Current year: Maximum discharge, 13,600 cfs Feb. 14 (gage height, 6.26 ft); minimum daily, 1,180 cfs Oct. 23.

Period of record: Maximum discharge, 26,200 cfs June 24, 1947 (gage height, 8.79 ft, site and datum then in use), from rating curve extended above 12,500 cfs by logarithmic plotting; maximum gage height recorded, 14.21 ft Apr. 2, 1965; minimum discharge, about 275 cfs Nov. 15, 1959, result of freezeup; minimum daily, 400 cfs Apr. 4, 1967.

REMARKS.--Records good except those for period of backwater from Yellowstone River, which are poor. Flow regulated by Bighorn Lake beginning November 1965 (usable capacity, 1,356,000 acre-ft). Major regulation prior to November 1965 by 14 reservoirs in Wyoming and 1 in Montana with combined usable capacity of about 1,400,000 acre-ft (see Appendices C and D). Diversions for irrigation of about 465,000 acres above station.

Month	Second-foot days	Maximum	Minimum	Mean	Runoff in acre-feet	Adjusted runoff in acre-feet*
Oct. 1970	87,330	3,360	1,180	2,817	173,200	195,200
Nov.	102,260	3,740	2,970	3,409	202,800	188,800
Dec.	127,640	4,800	2,930	4,117	253,200	167,500
Jan. 1971	135,370	6,000	3,200	4,367	268,500	212,100
Feb.	148,780	12,800	3,300	5,314	295,100	290,700
Mar.	186,010	8,040	4,600	6,000	369,000	319,000
Apr.	188,540	7,800	4,970	6,285	374,000	288,100
May	232,410	8,740	5,730	7,497	461,000	415,400
June	262,880	9,780	7,620	8,763	521,400	702,900
July	175,800	7,640	4,220	5,671	348,700	489,200
Aug.	99,900	5,060	2,350	3,222	198,200	164,200
Sept. 1971	<u>85,230</u>	3,200	2,530	2,841	<u>169,100</u>	<u>223,100</u>

Water year						
1970-71	1,832,150	12,800	1,180	5,020	3,634,000	3,656,000

* Adjusted for change in contents in Bighorn Lake.

BIGHORN RIVER AT BIGHORN, MONT.
ADJUSTED FOR CHANGE IN CONTENTS IN BIGHORN LAKE
MINUS
LITTLE BIGHORN RIVER NEAR HARDIN, MONT.

EXPLANATION

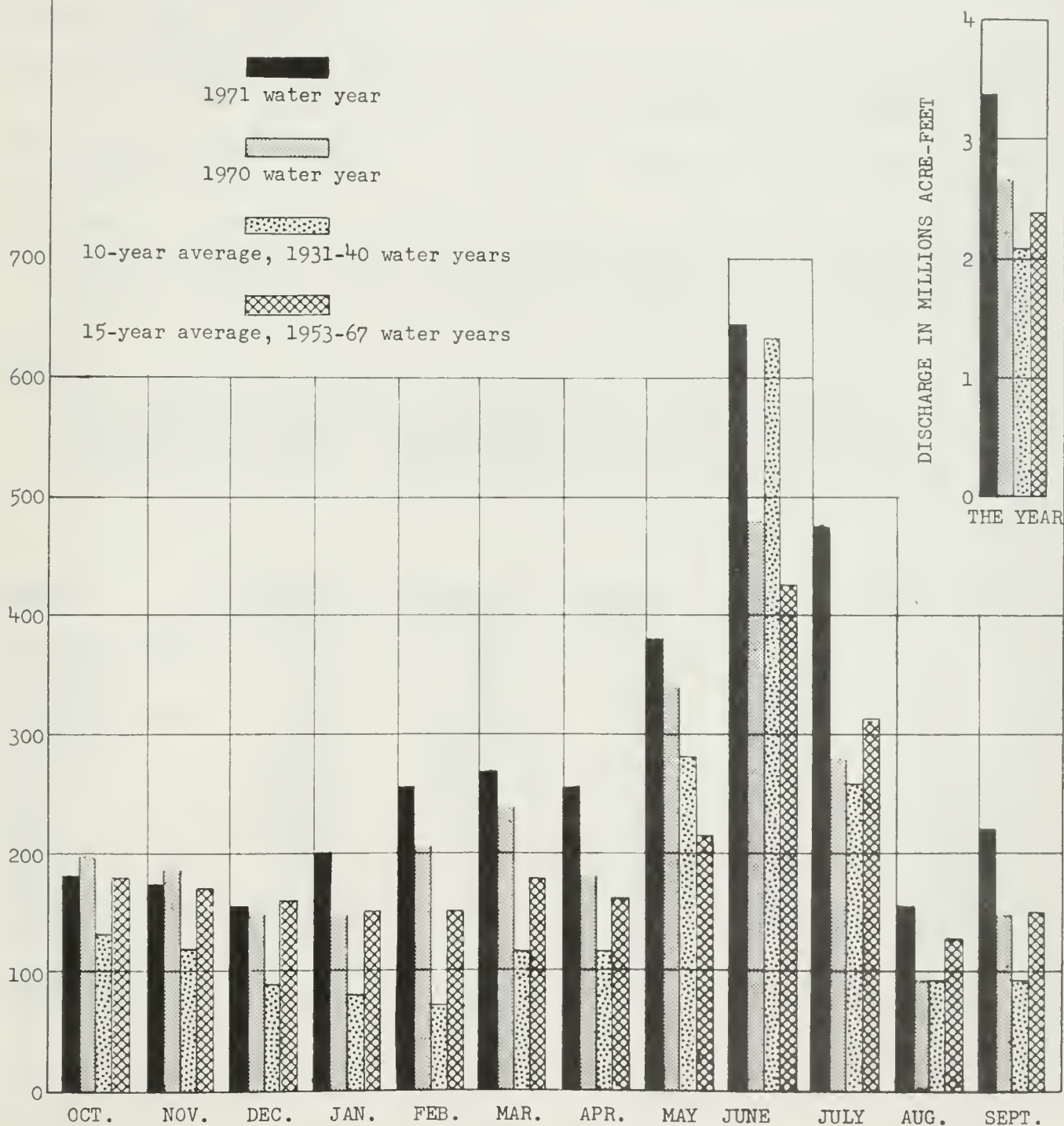
1971 water year

1970 water year

10-year average, 1931-40 water years

15-year average, 1953-67 water years

DISCHARGE IN THOUSANDS ACRE-Feet



Comparison of discharge during 1971 water year with 1970 water year and with average discharge for water years 1931-40 and 1953-67.

Appendix B

MONTHLY SUMMARY OF DISCHARGE
Prairie Dog Creek near Acme, Wyoming

LOCATION.--Lat $44^{\circ}59'02''$, long $106^{\circ}50'21''$, in NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.58 N., R.83 W., Sheridan County, on right bank 600 ft upstream from county bridge, 0.9 mile upstream from mouth, 2.8 miles downstream from Coutant Creek, and 7.6 miles northeast of Acme.

DRAINAGE AREA.--358 sq mi.

PERIOD OF RECORD.--October 1970 to September 1971. Records for May 1965 to September 1970 in files of Office of Wyoming State Engineer.

GAGE.--Water-stage recorder. Altitude of gage is 3,450 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 567 cfs Mar. 28 (gage height, 5.21 ft), from rating curve extended above 90 cfs on basis of step-backwater computation; maximum gage height, 5.62 ft Feb. 16 (backwater from ice); minimum daily discharge, 7.4 cfs Aug. 11, 12, 17.

REMARKS.--Records good except those for winter period, which are poor. Diversions above station for irrigation of about 13,600 acres of which about 50 acres lies below station. Flow supplemented by 3 transbasin diversions from North Piney Creek and South Piney Creek via Prairie Dog ditch, Piney and Cruse ditch and Mead-Coffeen ditch.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in acre-feet</u>
October 1970	1,378	60	27	44.5	2,730
November	1,047	43	12	34.9	2,080
December	797	42	15	25.7	1,580
January 1971	712	30	15	23.0	1,410
February	1,541	250	20	55.0	3,060
March	2,984	457	28	96.3	5,920
April	3,024	333	46	101	6,000
May	1,286	108	13	41.5	2,550
June	884	91	13	29.5	1,750
July	372.3	19	9.2	12.0	738
August	317.7	18	7.4	10.2	630
September 1971	<u>794.0</u>	39	14	26.5	<u>1,570</u>
Water year 1970-71	15,137.0	457	7.4	41.5	30,020

MONTHLY SUMMARY OF DISCHARGE
Tongue River at Miles City, Montana

LOCATION.--Lat 46°21'30", long 105°48'24", in SE $\frac{1}{4}$ sec.23, T.7 N., R.47 E., Custer County, on right bank 4 miles south of Miles City and 8 miles upstream from mouth.

DRAINAGE AREA.--5,379 sq mi.

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to September 1971. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. Monthly discharge only for some periods, published in WSP 1309. Records since January 1950 available in annual report of Yellowstone River Compact Commission.

GAGE.--Water-stage recorder. Altitude of gage is 2,370 ft (by barometer). April 1938 to April 1942, nonrecording gage at site 8 miles upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--28 years (1938-41, 1946-71), 417 cfs (302,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, about 9,000 cfs Feb. 15 (gage height, 13.27 ft, ice-jam); minimum discharge recorded, 45 cfs July 18.

Period of record: Maximum discharge, 13,300 cfs June 15, 1962 (gage height, 12.33 ft, present datum), from rating curve extended above 5,200 cfs on basis of float measurement; maximum gage height, 13.27 ft (present datum) Mar. 19, 1960, Feb. 15, 1971 (ice jam); no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

REMARKS.--Records good except those for winter period, which are poor. Flow regulated by Tongue River Reservoir (Appendix C) and many small reservoirs in Wyoming (combined capacity, about 15,000 acre-ft). Diversions for irrigation of about 90,000 acres above station.

Month	Second-foot days	Maximum	Minimum	Mean	Runoff in acre-feet
October 1970	8,269	286	220	267	16,400
November	8,500	332	160	283	16,860
December	6,455	260	180	208	12,800
January 1971	5,860	215	170	189	11,620
February	50,220	8,000	200	1,794	99,610
March	55,276	4,300	966	1,783	109,600
April	29,368	1,910	776	979	58,250
May	36,430	1,540	888	1,175	72,260
June	50,674	2,320	776	1,689	100,500
July	7,256	727	47	234	14,390
August	3,196	272	65	103	6,340
September 1971	6,724	420	150	224	13,340
Water year 1970-71	268,228	8,000	47	735	532,000

